Project: Analyzing a Market Test

Step 1: Plan Your Analysis

The company is looking to introduce a new menu to reignite growth at its stores and needs to figure out if the new menu will drive enough revenue to offset the cost of marketing associated with it.

The management will justify the introduction of the new menu only if the predicted revenue improves by 18%.

Since the target variable is profit, the performance metric that we will use to evaluate the test is Gross Margin.

The test period is for 12 weeks (2016-April-29 to 2016-July-21), where five stores in each of the test markets offered the updated menu along with television advertising.

We should aggregate the data at the week level.

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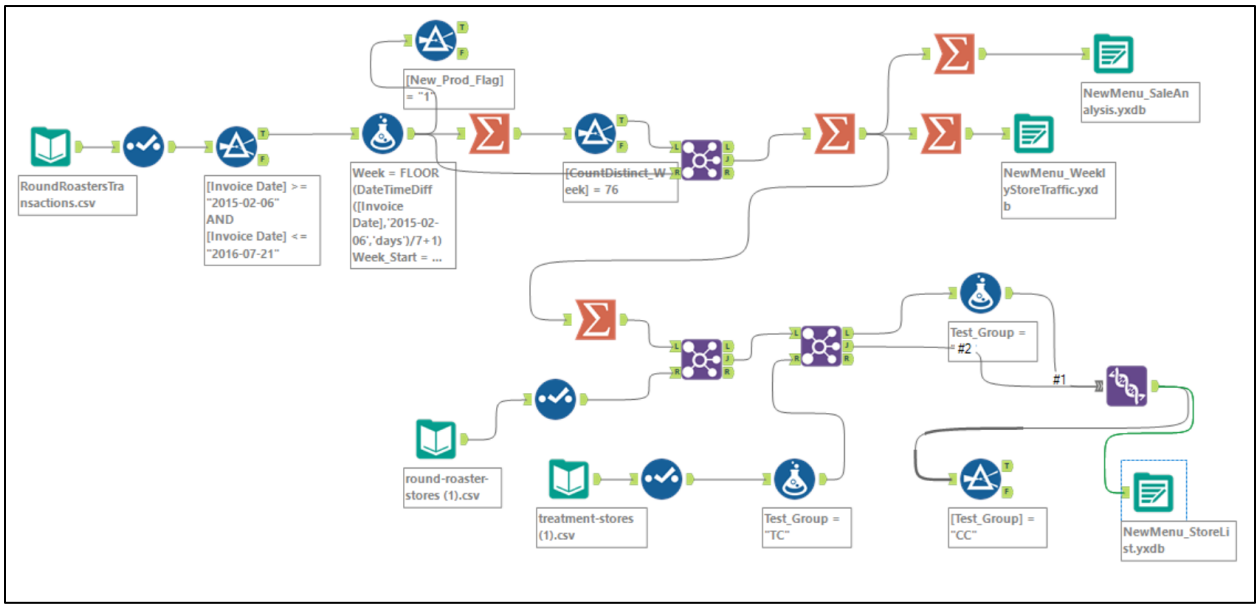
Step 2: Clean Up Your Data

The most commonly used measures to measure trend overtime are growth in the in-store traffic and seasonal pattern in sales.

Using raw data, we created three data files:

1. Weekly Store Traffic.
2. Store Sale Analysis to aggregate revenue information.
3. And create a list of stores with a flag for the test group.



Workflow to produce the required datasets.

Step 3: Match Treatment and Control Units

Apart from trend and seasonality...

1. What control variables should be considered? Note: Only consider variables in the RoundRoastersStore file.
   The square footage of the store and the average monthly sales for the store are considered as the control variables in our test.

2. What is the correlation between your each potential control variable and your performance metric?
   The control variables considered are average monthly sales and square footage of the store.
   The performance metric considered for the test is the gross margin.
   Average monthly sales and gross margin display a strong positive correlation, and the relationship is statistically significant.
   Square footage and gross margin display a weak negative correlation, and the relationship is statistically not significant.

Full Correlation Matrix

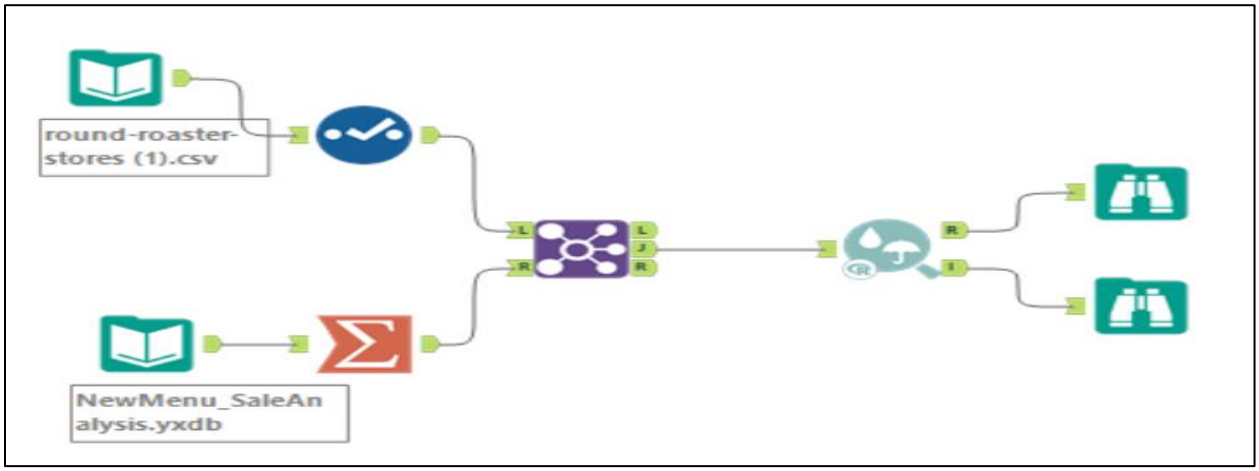
	Sq_Ft	AvgMonthSales	Sum_Gross.Margin
Sq_Ft	1.000000	-0.040063	-0.028479
AvgMonthSales	-0.040063	1.000000	0.994577
Sum_Gross.Margin	-0.028479	0.994577	1.000000

Matrix of Corresponding p-values

	Sq_Ft	AvgMonthSales	Sum_Gross.Margin
Sq_Ft		0.65997	0.75452
AvgMonthSales	0.65997		0.00000
Sum_Gross.Margin	0.75452	0.00000	

Correlation Matrix between Control and Performance Variables

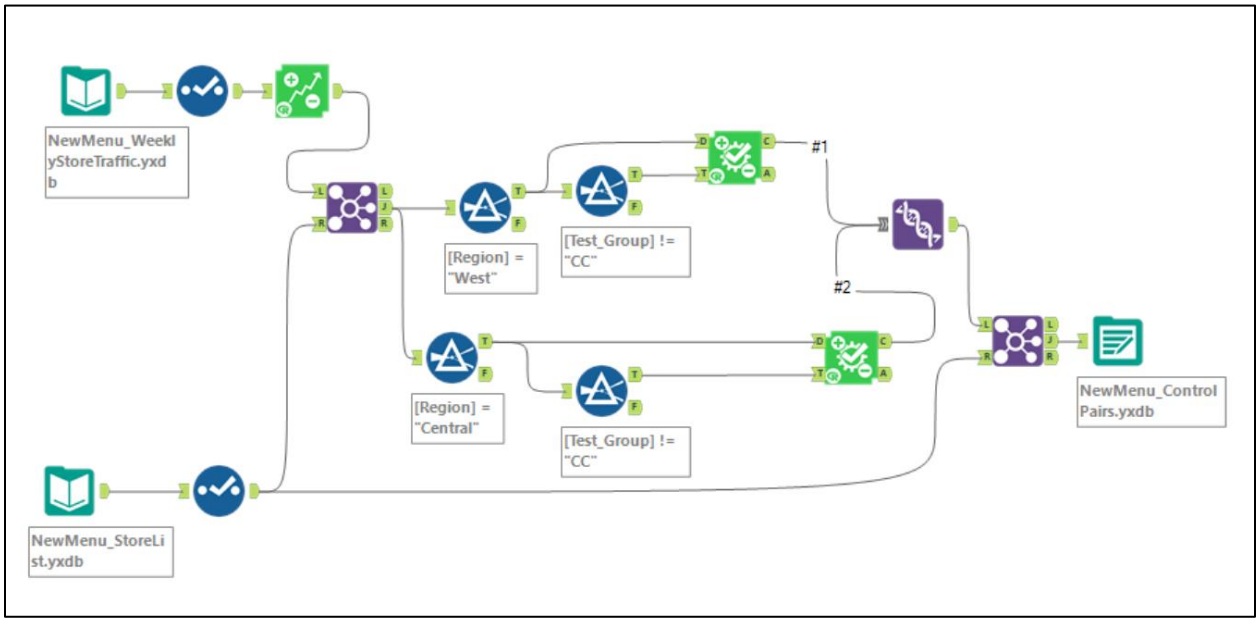
3. What control variables will you use to match treatment and control stores?
   To pair treatment and the control stores, we will use Average Monthly sale as the continuous control variable.



Alteryx workflow for correlation matrix

4. Please fill out the table below with your treatment and control stores pairs:

Treatment Store	Control Store 1	Control Store 2
2288	9081	2568
2293	12219	9524
2301	3102	9238
2322	2409	3235
2341	12536	2383
1664	7162	8112
1675	1580	1807
1696	1964	1863
1700	2014	1630
1712	8162	7434

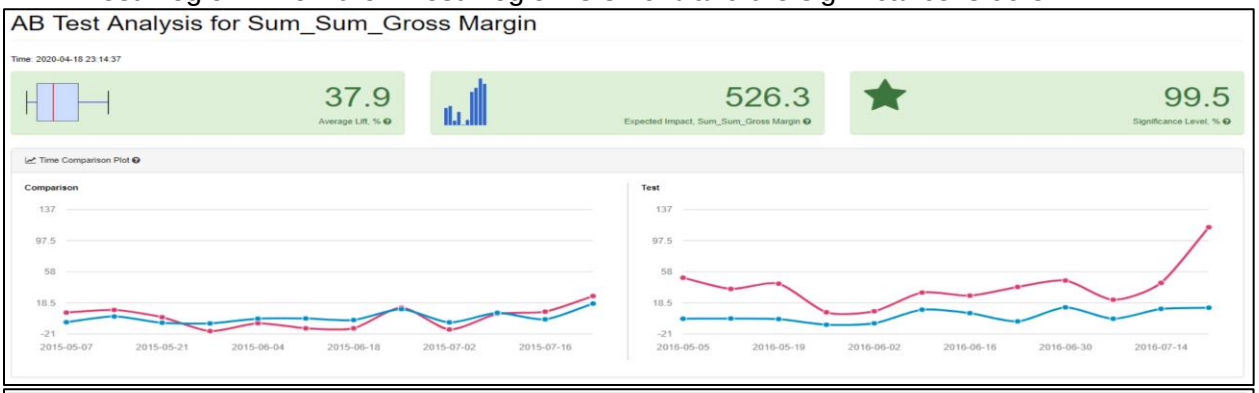


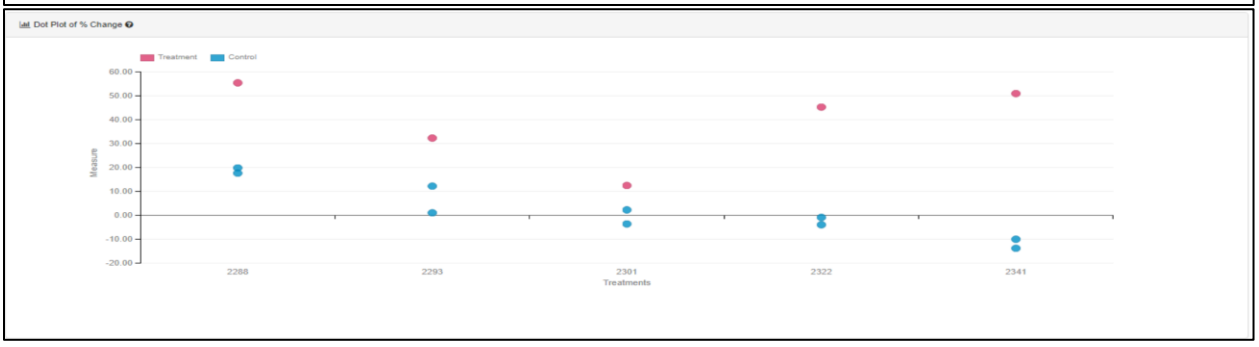
Alteryx Workflow for Control Pairs

Step 4: Analysis and Writeup

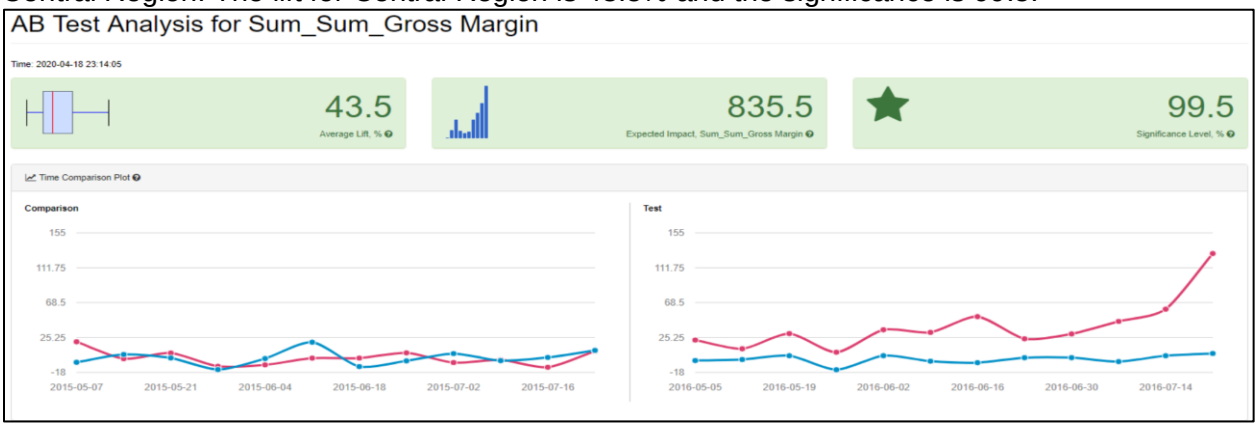
1. What is your recommendation - Should the company roll out the updated menu to all stores?
   Yes, the company should roll out update to all the stores as the average lift for both the regions was well above 18% which justifies the increase in the marketing budget.

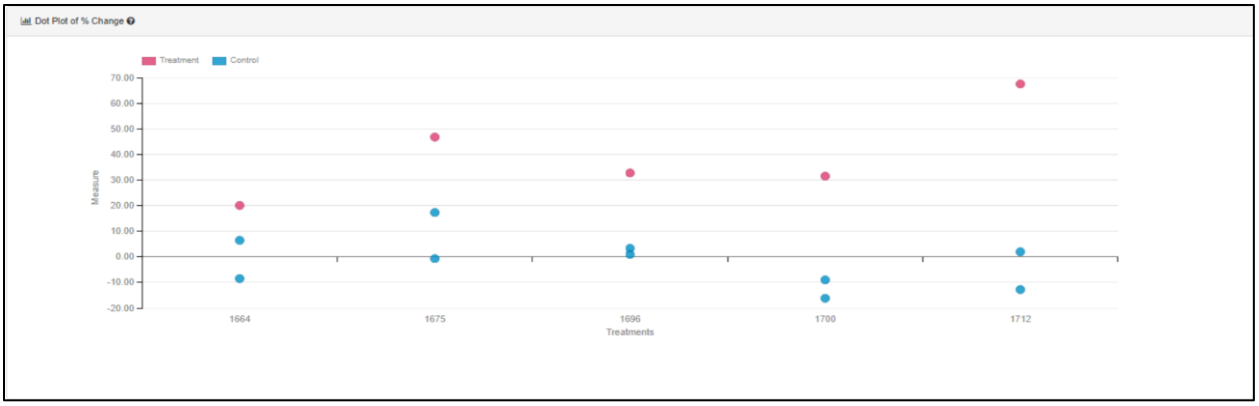
2. What is the lift from the new menu for West and Central regions (include statistical significance)?
   West Region: The lift for West Region is 37.9% and the significance is 99.5.



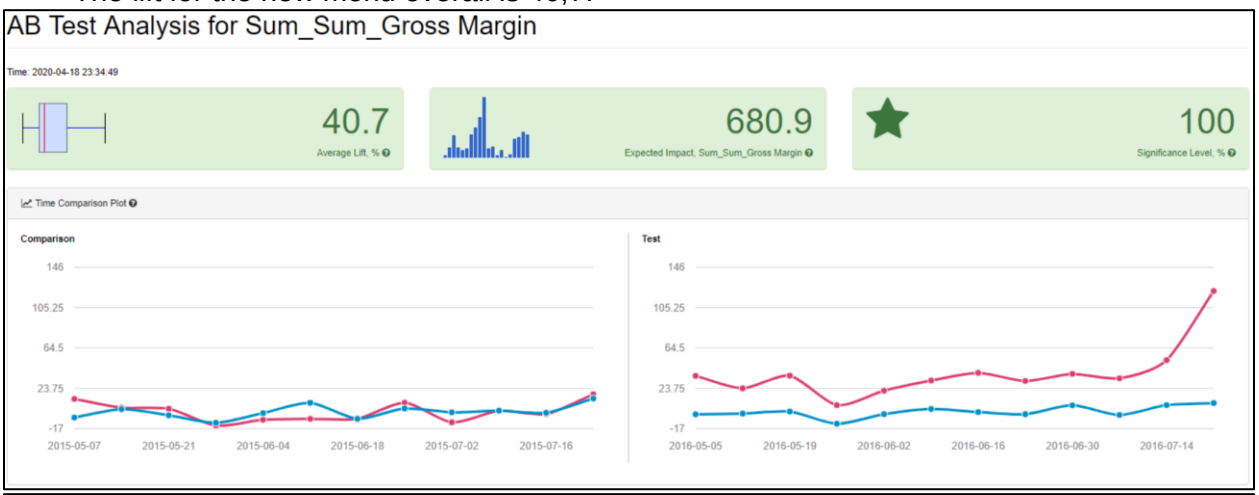


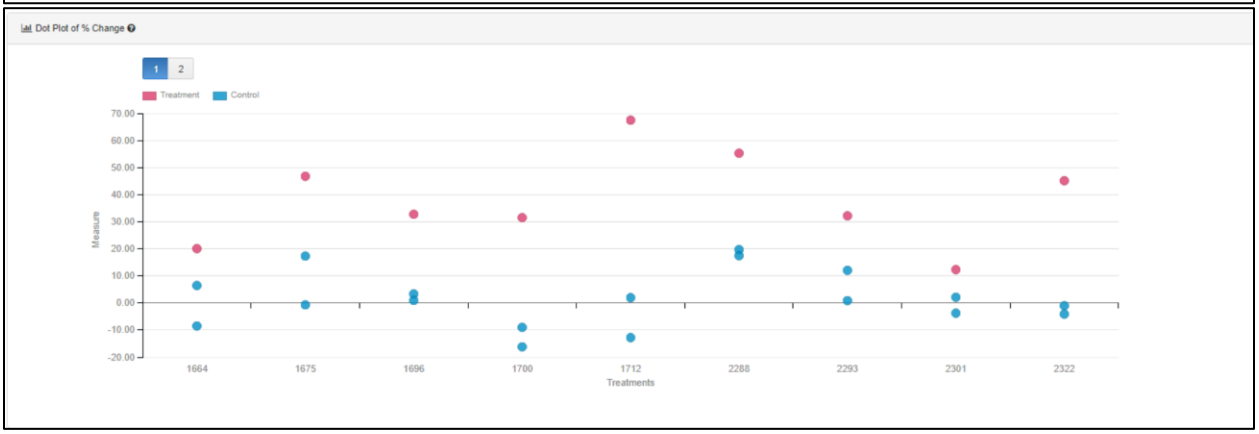
Central Region: The lift for Central Region is 43.5% and the significance is 99.5.

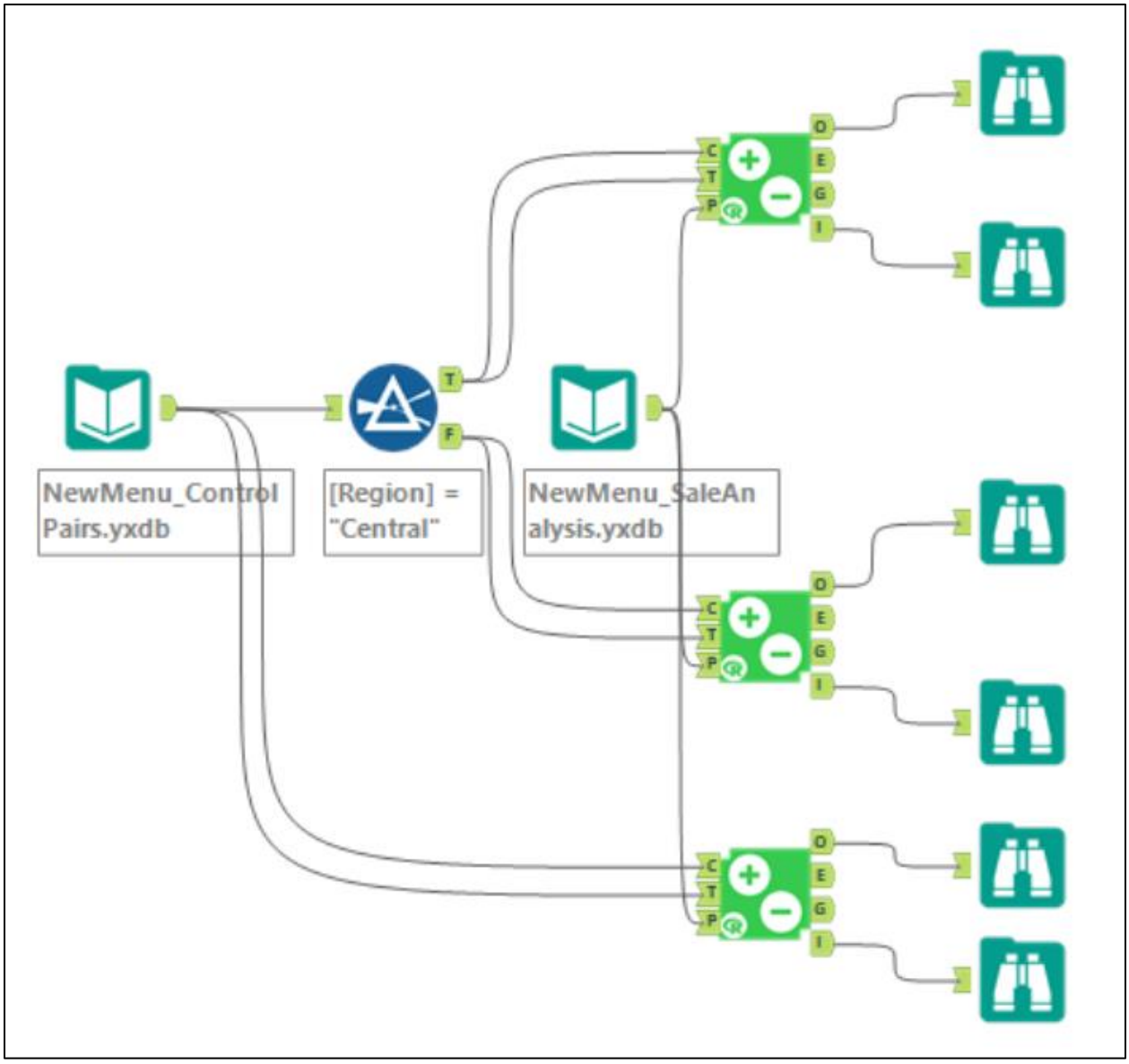




3. What is the lift from the new menu overall?
   The lift for the new menu overall is 40,7.







Alteryx Workflow for A/B Test Results